

What is claimed is:

- 1 1. A data writing apparatus for writing data into storage
2 means, comprising:
3 an upper-rank unit;
4 first storage means where data to be written has a
5 redundancy structure; and
6 a control unit which writes data in said first storage
7 means in response to a command from said upper-rank unit and
8 includes
9 second storage means, and
10 logical disk writing/reading means for writing in said
11 second storage means data writing of which at an address in said
12 first storage means is instructed by said upper-rank unit and
13 reporting completion of writing to said upper-rank unit, when
14 a redundancy destruction occurs at said address.
- 1 2. The data writing apparatus according to claim 1,
2 wherein said control unit further comprises logical disk
3 monitoring means which verifies if said redundancy destruction
4 at said address has been recovered, and
5 when said logical disk monitoring means verifies that said
6 redundancy destruction at said address has been recovered, said
7 logical disk writing/reading means reads data written in said
8 second storage means and writes said data at said address in
9 said first storage means.
- 1 3. The data writing apparatus according to claim 2,
2 wherein said logical disk monitoring means comprises:
3 management table updating means which checks a status of

4 said first storage means and updates a management table;
5 a timer which informs said management table updating means
6 of passage of a given time when elapsed; and
7 write-enableness reporting means which reports recovery
8 of said redundancy destruction at said address to said logical
9 disk writing/reading means when said management table indicates
10 said recovery of said redundancy destruction.

1 4. The data writing apparatus according to claim 1,
2 wherein said second storage means is non-volatile storage means
3 or volatile storage means having an independent power supply.

1 5. The data writing apparatus according to claim 1,
2 wherein said second storage means retains data written by said
3 control unit until said data is written in said first storage
4 means.

1 6. A data writing/reading apparatus for writing data into
2 storage means, comprising:

3 an upper-rank unit;

4 first storage means where data to be written has a
5 redundancy structure; and

6 a control unit which writes data in said first storage
7 means in response to a command from said upper-rank unit and
8 includes

9 second storage means, and

10 logical disk writing/reading means for writing in said
11 second storage means data writing of which at an address in said
12 first storage means is instructed by said upper-rank unit and
13 reporting completion of writing to said upper-rank unit, when

14 a redundancy destruction occurs at said address, and reading
15 from said second storage means data for which a command to read
16 from said address is given from said upper-rank unit when that
17 data exists.

1 7. The data writing/reading apparatus according to claim
2 6, wherein said control unit further comprises logical disk
3 monitoring means which verifies if said redundancy destruction
4 at said address has been recovered, and

5 when said logical disk monitoring means verifies that said
6 redundancy destruction at said address has been recovered, said
7 logical disk writing/reading means reads data written in said
8 second storage means and writes said data at said address in
9 said first storage means.

1 8. The data writing/reading apparatus according to claim
2 7, wherein said logical disk monitoring means comprises:

3 management table updating means which checks a status of
4 said first storage means and updates a management table;

5 a timer which informs said management table updating means
6 of passage of a given time when elapsed; and

7 write-enableness reporting means which reports recovery
8 of said redundancy destruction at said address to said logical
9 disk writing/reading means when said management table indicates
10 said recovery of said redundancy destruction.

1 9. The data writing/reading apparatus according to claim
2 6, wherein said second storage means is non-volatile storage
3 means or volatile storage means having an independent power
4 supply.

1 10. The data writing/reading apparatus according to
2 claim 6, wherein said second storage means retains data written
3 by said control unit until said data is read by said control
4 unit.

1 11. A data writing apparatus for writing data into storage
2 means, comprising:

3 an upper-rank unit;

4 first storage means including data writing of which is
5 instructed by an upper-rank unit and redundancy data and capable
6 of, if data of a size equal to or smaller than a size of said
7 redundancy data is destroyed, ensuring data writing from
8 remaining data while repairing said data writing of which is
9 instructed, in response to a command from said upper-rank unit;

10 a control unit which writes data in said first storage
11 means in response to a command from said upper-rank unit and
12 includes

13 second storage means, and

14 logical disk writing/reading means for writing in said
15 second storage means data for which a command to write at an
16 address in said first storage means is given from said upper-rank
17 unit and reporting completion of writing to said upper-rank unit,
18 when writing is not possible due to an error during data correction
19 in an area including said address.

1 12. A method for writing data into storage means where
2 data to be written has a redundancy structure, comprising the
3 steps of:

4 A) when a redundancy destruction occurs at an address in

5 said first storage means where data to be written has a redundancy
6 structure, writing in said second storage means data writing
7 of which at said address is instructed by an upper-rank unit;
8 and

9 B) reporting completion of writing to said upper-rank unit.

1 13. The method according to claim 12, further comprising
2 the steps of:

3 C) verifying if said redundancy destruction at said address
4 has been recovered;

5 D) when recovery of said redundancy destruction is verified,
6 reading data written in said second storage means; and

7 E) writing said data at said address in said first storage
8 means.

1 14. The method according to claim 12, further comprising
2 the steps of:

3 F) checking a status of said first storage means when a
4 given time elapses;

5 G) updating a management table;

6 H) reading data written in said second storage means when
7 said management table indicates recovery of said redundancy
8 destruction; and

9 I) writing said data at said address in said first storage
10 means.

1 15. A method for writing and reading data into and from
2 storage means where data to be written has a redundancy structure,
3 comprising the steps of:

4 J) when a redundancy destruction occurs at an address in

5 said first storage means, writing in said second storage means
6 data writing of which at said address is instructed by an
7 upper-rank unit;

8 K) reporting completion of writing to said upper-rank unit;
9 and

10 L) when there is data reading of which from said address
11 is instructed by said upper-rank unit, reading said data from
12 said second storage means.

1 16. The method according to claim 15, further comprising
2 the steps of:

3 M) when recovery of said redundancy destruction is verified,
4 reading data written in said second storage means and writing
5 said data at said address in said first storage means.

1 17. The method according to claim 15, further comprising
2 the steps of:

3 N) checking a status of said first storage means when a
4 given time elapses;

5 O) updating a management table;

6 P) reading data written in said second storage means when
7 said management table indicates recovery of said redundancy
8 destruction; and

9 Q) writing said data at said address in said first storage
10 means.

1 18. A computer program capable of running on a computer
2 so that the computer performs said steps of claim 12.